ON THE DEVELOPMENT OF THE IRON TRADE.

[Concluded from the Journal of Dec. 8.]

We now come to the celebrated competition of locomotives on the Liverpool and Manchester Railway, in the autumn of 1830, when Stephenson's celebrated engine, the "Rocket," won the prize. "It is impossible to believe," says Mr. Zerah Colburn, "that the ultimate determination of the Liverpool and Manchester Railway directors to adopt locomotive power for working their line was not in some degree influenced by the considerable success already obtained by steam carriages upon common roads. Sir James Anderson and Sir Charles Dance were giving great attention to this class of locomotives. Gurney's engine had been so far improved that shortly afterwards (July, 1829) the Duke of Wellington, then Prime Minister, was drawn in his own barouche by one of them at Hounslow, and William Henry James had also made and worked a steam carriage, with encouraging results." Stephenson was engineer of the Liverpool and Manchester line, projected by Messrs. W. H. James and Charles Vignoles, in 1822. Stephenson had made an engine for the line, but its results had not been encouraging. A "deputation of the directors had visited Newcastle, Darlington, and the collieries in the neighbourhood, but their conclusions as to the locomotives employed were unfavourable. Messrs. Walker and Rastrick, who were engineers of eminence, were finally called in to examine the whole subject of fixed and locomotive power * * * and after careful enquiry reported in favour of stationary engines and rope traction (Z. Colb., p. 24), and Mr. Wood expressed his conviction, from what he knew, that no locomotive could go faster than eight miles an hour. Two or three of the directors, however, were in favour of making a competitive trial of locomotives on the line, before deciding a question of such great importance. George Stephenson, and Murray, of Leeds, were the only two locomotive constructors of importance in the kingdom at that time, and the prize of 500*l.* for the best engine was, therefore, offered and open to "all comers." The conditions were briefly as follows:—1. Engine to consume its own smoke, as per Act of Parliament.—2. Engine, if of 6 tons, to draw 20 tons daily, at 10 miles per hour, with a pressure of 50 lbs. per square inch.—3. Boiler to have two safety-valves, neither of which to be fastened down, and one beyond control of engineman.—4. Engine to be on springs; 15 ft. maximum height.—5. Engine to weigh 6 tons, with water; boiler proved to 150 lbs.—6. Mercurial pressure gauge.—7. Engine to be delivered for trial by a certain day.—8. Price not to exceed 550*l.* It appears that all that was requisite to fulfil these conditions was shorter stroke, larger wheels, return flue, small chimney, and steam blast. In 1824, Mr. Sylvester had recommended larger driving wheels, and spoke of a diameter of 6 ft. as enormous, but as capable of giving, with a 9-in. cylinder and 24-in. stroke, much higher speed than nine miles per hour. There were four entries for this memorable contest. Stephenson's engine was called the "Rocket," and was entered in his son's name; Timothy Hackworth entered the "Sansparell;" Messrs. John Braithwaite and John Ericcson brought forward the "Novelty;" and Mr. John Burstall sent the "Perseverance," which, in consequence of an accident, was withdrawn from the contest. The "Rocket" was the first engine tried, and its trial extended over nearly the whole of the first day. The weight of the "Rocket" was 4 tons 5 cwts.; that of the tender 3 tons 4 cwts.; two wagons, laden with stones, 9 tons 10 cwts.; the whole moving weight being 17 tons. The "Rocket" sustained its trial without accident, with its full load and stone train, and attained a mean speed of 13·8 miles per hour. The engine was then tried without its load, and gave a mean speed of 29½ miles per hour.

The "Novelty" and "Sansparell" broke down from accidents, but the latter indicated a higher speed than the "Rocket" during the time it did run (17·47 miles per hour); but the "Rocket" being the only engine which fulfilled all the conditions, the prize was, at the end of the trials, and after the judges had referred to the railway directors, awarded to Mr. Robert Stepenson as the maker, and Mr. Booth as the supposed inventor of the multitubular boiler. The "Rocket" has been described as the "parent of the swift and powerful engines of the present day," but the "Sansparell" closely disputed the honour of that parentage, and had a numerous progeny of its own. The Liverpool and Manchester Railway directors might well afford their 500*l.* prize, for the immediate effect of the competitive trial was a rise in the value of their stock to the extent of 65,000*l.* This competitive trial resulted in orders for a number of engines on the "Rocket" principle, but they were larger and heavier than the original, being from 6½ to 7 tons, with 5 ft. diameter driving wheels. Imperfect as this trial would be considered in the present day, it had an enormous influence on the mechanical science of our age; it led other minds more learned to study the problem, and it occupies an important place in the history of locomotion, as it was one of the turning points in the life and career of Stepenson.

It must not be forgotten that simultaneously with Sir Humphry Davy's discovery of the miners' safety-lamp, George Stephenson independently discovered it also. He had for some time turned his attention to the improvement of the permanent way of railways, upon the solidity and smoothness of which the success of the locomotive depended. As a civil engineer, he planned the execution of the Hetton Railway, and was assisted by his younger brother, Robert. The Stockton and Darlington, the first public railway ever made, was entrusted to his supervision. Stephenson, as before mentioned, was engineer of the Liverpool and Manchester Railway, and when the promoters wished to use locomotives instead of horses or rope traction, they met with a decided and determined opposition from the landowners and canal companies. The scheme was denounced as madness, and the opposition openly doubted Stephenson's sanity. They called him Watt run mad; and when examined before the Committee of the House of Commons he was asked the question as to what speed per hour the train could travel at, he was about to say 26 miles, but checked himself, lest he should be laughed at, and said 10 or 12 miles per hour; even this caused much merriment. He was asked the question, "If a cow came across the line, and in contact with the engine, would the consequences not be serious?" He replied dryly, "Ay, verra serious for the coo." The matter was referred to certain engineers of eminence to report on; they produced their report, which passed for "a very able document," and pronounced the locomotive for passenger traffic to be practically and commercially inexpedient. But better councils prevailed, the horse tram was abandoned, and the locomotive triumphed. The era of railways had now commenced, and Stephenson took a prominent part as a leading authority, and was the civil engineer of nearly 400 miles of railway in this kingdom. He retired from the profession of a civil engineer in 1840, but for some years afterwards was consulted as to the formation of various British and foreign lines. He strongly condemned, and stood resolutely aloof from, the wild schemes of the railway mania of 1844-5, and although innumerable promoters sought the sanction of his name to their projects, he was deaf to entreaties, except a few lines of undoubted merit. Caution, boldness, enterprise, and judgment were the characteristics of his engineering works and plans, and their execution displayed solidity, durability, conscientious care, and a thorough mastery of the practical details. His life and manners were simple and unassuming; he knew the disadvantage he laboured under from his defective education, and was determined to save his son the anguish of this consciousness. He repaired his neighbours' clocks and watches after the day's work had been done, to furnish the means to educate his son, and this he accomplished. Robert was sent to the University of Edinburgh in 1820 (I was a student there myself 21 years later). Robert showed great aptitude for learning, was his father's assistant and constant adviser, and assisted materially in developing his ideas; and Stephenson lived to see them so far realised that he travelled from London to his home in a single day. He once said to a lady, "They used to call me George Stephenson; I am now called George Stephenson, Esq., of Tapton House, near Chesterfield. And, further, let me say that I have dined with princes, peers, and commons, with persons of all classes, from the humblest to the highest. I have dined off a red herring when seated in a hedge bottom, and have gone through the meanest drudgery. I have seen mankind in all its phases, and the conclusion I have arrived at is this—that if we were all stripped there is not much difference between us." Practical common sense was his chief characteristic; he hated bumptiousness and pretence. He thought for himself, and neither betowed nor accepted flattery. His distinctions were the reward of merit; his honours the well earned rewards of assiduity, single-mindedness, and devotion to his cause. He was created a Knight of Leopold of Belgium, for his engineering services; was a Fellow of the Royal Society; he was called the founder of, and was the first President of, the Society of Mechanical Engineers. Whilst thus crowned with honours and wealth, he was most solicitous for the physical and mental improvement of the workmen and colliers in his employment. He died in 1848 (Aug. 12), in the 68th year of his age, after a life of amazing usefulness, adding another brilliant example to the many this country has produced of men rising from obscurity to eminence, and adorning, by the rugged virtue of a natural intellect, a position to which his most sanguine early hopes had never led him to aspire.

The year which followed that in which the before-mentioned locomotive competition took place was memorable in the history of railways, for an event which cast a gloom over the England of 1830. On Sept. 15 of that year the Liverpool and Manchester Railway was opened, with its new steam-engines, and with great *eclat*. The noble and learned were there, the peer, the statesman, the commoner, drawn by curiosity as well as interest, *pour assister* at the inauguration of this comparatively new mode of transport. A lamentable accident on that day deprived England of one of its most enlightened statesman, one of the precursors of that liberal commercial policy which culminated 16 years afterwards in free trade; this was the death of the Right Hon. William Huskisson, long Member of the House of Commons, Member for Liverpool, and President of the Board of Trade; he had held the seals of the Colonial Office under Lord Goderich, and had continued to hold office under the Duke of Wellington. The Duke was present at the opening of the railway, and Mr. Huskisson was also there. An estrangement of a political nature having occurred between them, and meeting thus unexpectedly, both were eager to remove the estrangement by a personal interview. When the train arrived at Parkside, Mr. Huskisson alighted with others, and walked about the line. The Duke had alighted from his carriage, and went to meet Mr. Huskisson, with whom he had no sooner interchanged compliments than an engine was seen approaching on the other line, and the cry of "get in" was immediately raised. The Duke, with his well-known presence of mind, resumed the carriage, but Mr. Huskisson appeared to be confused, and being habitually awkward, especially under emergencies, he grasped the carriage door, which swung round, and as he fell on the other line was crushed by the advancing engine. He was immediately conveyed to Eccles, near Manchester, and died the same evening, after suffering great agony. This untoward event cast great gloom over the success of the enterprise, with which his mournful fate has ever since been associated. In the following year his speeches were published in three volumes, with a copious memoir, and a statue at Liverpool commemorates his many public and private virtues.

While thus imperfectly relating somewhat of Stephenson's achievements, it must not be omitted to mention those who were his co-pioneers in railway locomotion—that Trevithick did much, as also did Timothy Hackworth, and it is just to say that both stamped their individuality upon the locomotive, and are indissolubly connected with its early history. The difficulties by which the problem was surrounded have gradually been solved and overcome; piece by piece has been added to the structure and the ceaseless activity of mechanical invention and improvement repaired the defects, and supplied the imperfections which were daily experienced. Bury and Kennedy's engine was devised so early as 1830; it was remarkable for compactness and working qualities. Many of this type were sent abroad, and still the general structure and arrangement of framing is adhered to by American locomotive builders. The great inventive genius of Mr. Roberts was also applied to the locomotive; he introduced superior workmanship in its construction, better proportion and finish of its principal parts, "having served in Maudslay's factory, then the highest school of mechanical engineering in the world. To the locomotive he added characteristic features of design, and sensibly advanced the standard of locomotive construction on every railway in England." Then came Forrester and Co.'s locomotive, in 1834, of which type many were sent abroad, particularly to the United States. This class of engine was nicknamed the "Boxer," in consequence of its unsteadiness, from the absence of counter-balances in the driving wheels. These engines had the merit of outside horizontal cylinders. The Americans meanwhile were not idle, and having imported some engines set about improving their defects, as they generally do with everything mechanical as well as political. Their first home-made engine was called the "Best Friend," and was made at West Point Foundry, New York, early in 1830. The "Experiment," constructed by Adam Hail, of New York, was the first "bogie" engine. The improvements added by the Americans, besides the "bogie," were "the four fixed eccentrics, the spark arrester, separate expansion valves, compensating levers between the springs of coupled engines, with several other minor improvements." Time will not permit me, even if I could, to describe how the slide valve became adapted to locomotives as it now is, although much which would be interesting might be said upon this subject; nor can I trace the various degrees of praise which our locomotive constructors deserve, or show what Byer, Peacock, and Co., Hawthorn and Co., Neilson and Co., of Glasgow, George England, Crampton, Sinclair, Ramsbottom, Beattie, Ashcroft, Ross, Winans, Colburn, M'Connell, and many other practical and scientific men, have done to bring the locomotive to its present state of efficiency and economy. Nor will time permit me to show what has been done on the Continent by those engineers who, bringing a severe scientific training and knowledge of the kindred sciences to the aid of practical experience, have learnt so aptly, and applied so deftly, the principles of this branch of mechanical knowledge, which, although born in England, are cosmopolitan; indeed, such unheard of progress have our continental neighbours made, that the iron horse of continental origin runs and competes with the descendants of his ancestors for the blue ribbon of the Derby of our iron roads. * * * In the railways of Great Britain there is a sum invested of over 400,000,000*l.*—more than half the amount of the National Debt. The length of line open was, a few years ago, about 26,000 miles, and if we calculate a locomotive per mile, the value in locomotives alone will reach 8,700,000*l.* This immense wealth, too, represents only a portion of a nation's savings during thirty years of peace and commercial tranquility. Great as the amount of capital involved has become, it is even now threatened with a new and terrible disease. The panic of 1846 swept away bubble schemes thrust into existence by heartless promoters, and many wealthy families were ruined by the madness twenty years ago; and the panic of this year has produced an anxiety amongst our railway proprietors which years will not quite allay. However, into these matters I cannot now intrude. The limit of your endurance for the present occasion has been reached, and to another paper must be devoted the investigation of the commercial and financial bearing of our railroads, together with its direct influence on the development of the iron trade, on which occasion I will lay before you the statistics upon which the arguments will be based, and take into consideration not only the iron production of England, Scotland and Wales, but those also of France and Belgium, with which your Chairman is well acquainted, he having visited both countries and seen for himself, as is his custom.

Mr. Robertson concluded as follows:—Science, now free as commerce, is not to be bounded by territory, language, or by race; its limits are co-extensive with those of commercial enterprise, and its boundary that alone which limits human intelligence; and whilst those men of intelligence have by their diligence perfected a system of transit which unites in twelve hours the capitals of England and Scotland, London and Paris, and cast a network of iron highways over the face of Europe, and the new world as well as the old, they have been, and are, the exponents and apostles of civilisation, the friends of peace and amity betwixt nation and nation, and man and man; they have found out the means of ready intercommunication between peoples of different languages, religions, and climes; they have become the mediums for disseminating political and commercial intelligence, and transmitting with a rapidity undreamt of 30 years ago that community of ideas which makes us all akin. But for the railway system of Europe the work of the world could not be done. The velocity of personal transit has accelerated the velocity of thought, and men think and act more rapidly now than they ever did before. The strain and tension on the active brain of man has kept pace with the railway system, or it may be more just to say that that system is the result of the mental activity of our age. It was not in the solitude of the cloister that this gigantic schoolmaster was bred and nurtured; it was not by the shady solitudes of Cambridge, or the verdure-clad walks of Oxford, that this new instructor graduated, but by the smoke and flame-belching furnaces of the North, in the coal-producing regions of Northumberland, where the grey canopy of mist rolling from the German Ocean receives, not the murmurs of a classic tongue, but the rough dialect of the pitman of the North, and the sound of the hammer swung by the sons of toil. This was the Alma Mater of this great means of learning, and I have shown you how one of its hardiest sons has become associated with this great branch of industry and science, in spite of all the difficulties by which his path was surrounded, and how that which was at first regarded as a day dream, and the vision of an enthusiast, has become the characteristic feature of our age.

SOCIETY OF ENGINEERS.

The first meeting for the year of this society took place on Monday, at Exeter Hall. The chair was taken by Mr. Zerah Colburn, the retiring president, who introduced Mr. W. H. Le Feuvre, the president for the present year. After the preliminary business, the President presented premiums to Mr. Cecil Wissely, for his paper on "Arched Roofs;" to Mr. Thomas Cargill, for his drawing of the bridge Place de l'Europe, Paris; and to Mr. Arthur Jaist, for his "Reservoirs and Embankments." Mr. Lewis O'Crick moved, and Mr. Brun seconded, a vote of thanks to the retiring president and council, after which

Mr. Le Feuvre, the newly elected president, in the course of a lengthy address, congratulated the society on the progress it had made during the twelve years it had been in existence. Turning thence to the matters in which the society had a vital interest, he noticed the recent collapse in the commercial world, which had so seriously retarded all railway and other engineering works. Another and a more recently-discovered enemy with which the British engineer had to contend was, however, the cheap work of our Belgian rivals. The race of competition was now, in fact, in favour of Belgium; so much so, that although in the case of the late Amsterdam Exhibition English work was used in the commencement, before the work was completed it was found that what was required could be procured much cheaper from Belgium. In the case of the New Pimlico Wheel Works, his (Mr. Le Feuvre's) firm had to give way to Belgian contractors; and for India work was actually shipped from Belgium to London, and thence transhipped to Bombay, at a less cost than it could have been purchased at from British manufacturers. In short, the inroads of foreign competition had at length reached to such an extent that one of our leading railway companies had invited a French firm to compete with our manufacturers for the supply and erection of the ironwork of their terminal station in London. Glancing at the much-discussed prospective scarcity of coal, the President expressed his hope that a substitute might be found to some extent in petroleum, with which experiments were at present being made under the auspices of Government. A singular result had recently been obtained by the introduction of a jet of steam into the flame of petroleum. The flame, which had hitherto been dull and red, now became white and clear, its volume was fivefold increased, and so complete was the combustion that the soot which was created under the ordinary mode of ignition almost wholly disappeared. Some endeavours have been made to employ compressed peat for many of the purposes for which coal is at present used, and it was found that a good gas even might be obtained by a mixture of one-third of Cannel coal with two-thirds of peat. A more important use to which this substance had been applied, and where it had perhaps more completely succeeded, had been discovered in its application to melting purposes in the foundry. Considering the important changes which had lately been introduced into most large foundry establishments, it was all the more difficult to account for their production being superseded. He could not refrain from expressing an earnest hope that an entire change would be made in the system of mining operations carried on in this country, which would make us strangers to such disasters as those of the late Hartley, Barnsley, and Oaks Colliery accidents. In relation to the question of colliery accidents, it seemed singular that the material of which the Davy lamp was made had not been employed in mines in any other form than that of a portable lamp, subject to accidents of various kinds. It would be probably worthy of trial, whether this material could not be employed to much greater advantage in the form of large chambers divided into compartments, within which numerous lights might be enclosed, and prevented under any circumstance from being exposed to contact with the surrounding air. It would be possible by some system of this kind to light up mines by gaslight, and so to supersede the use of the Davy lamp by distribution amongst the men. To secure the safety of those engaged in mining operations, it had been proved beyond doubt that the number of shafts should be increased. Should that be enforced by the Legislature, it would no doubt greatly tend to the preservation of life, as, in the event of any casualty occurring, the diffusive energy of the atmosphere would more readily come to the relief of those not immediately sacrificed, and restore them to consciousness. The extensive improvements which were now in course of completion as to the facilities for producing large quantities of iron and steel in the northern district of the kingdom was, in some measure, owing to the large demands made for those materials on account of improved systems of naval architecture lately introduced into this country. We were now more strongly impressed than ever with the advantages of iron and steel in place of wood in the structure of ships. After thirty years' practical experience, the only objections which could be raised against iron ships were the liability of the bottoms to foul by the adhesion of vegetable and animal substances, and the derangement of the compasses by the local attraction of the iron in the hull. The advantages an iron ship possessed over those built of wood were numerous—superior strength, more certainty in the quality of material, greater durability, reduced weight, less cost, and more carrying capability. As iron had superseded wood for ships in consequence of the many advantages it possesses, the question for consideration was whether we should not employ steel in place of iron. We might assume the tensile strength of iron would bear half the strain of steel; that would show that nearly half the weight of steel might be adopted as an equivalent for iron; and considering it commercially, the price of Bessemer steel plates at 20*l.* per ton, as compared with iron plates at 10*l.* per ton, a considerable saving might be effected by a vessel being able to carry additional cargo equal to the increased weight, without additional cost. The gas and water supplies came next under consideration, the President stating that there was a waste of 100,000 tons of coals in London alone, in consequence of the leakage of gas. The address concluded with the expression of a hope that England might still, as she had always done, continue to take the initiative in all that might tend to advance the welfare and glory of mankind.

At the termination of Mr. Le Feuvre's address, which was loudly applauded, the following gentlemen were elected members of the society:—Harry Maull Finch, Colombo, Ceylon; John Jasper Horner, Avenue-road, Hammersmith; Ewing Matheson, Walbrook; Jabez Church, Chelmsford; Joseph Bennet Howell, Sheffield; Thomas Jourdain Hay, Great College-street; Arthur Jacob, B.A., Croydon; Henry Gielgud, George-yard, Lombard-street; John Wood, Nuneaton; Charles Sexton Baylee, Oakley-crescent, Chelsea.—Associates: Joseph Cash, Hove, near Brighton; Johannes D. F. Hald, New Broad-street; James Young Davidson, Brunswick-place, Lewisham; William Oxford, Grosvenor-road, Pimlico. The names of a large number of candidates were announced for ballot at the nexting, on Feb. 4.

THE INCORPORATED ASSOCIATION OF MINE AGENTS OF SOUTH STAFFORDSHIRE AND EAST WORCESTERSHIRE.

The inaugural meeting of this association was held at the Dudley Arms Hotel, Dudley, on Jan. 21, 1867, and was attended by upwards of sixty of the mine agents practising in this district. The meeting was called for the purpose of electing a president, treasurer, secretary and seventeen directors, and to confirm the Articles of Association. Alderman Job Taylor, of Tansley Hill House, was called to the chair.

The circular convening the meeting was read. It set forth that the principal business for which the meeting was called was for the purpose of confirming the proposition for forming "a legal corporate body with common seal, duly registered and legally constituted, to be called the Incorporated Association of Mine Agents of South Staffordshire and East Worcestershire," and by the Memorandum of Association it appears that the objects of the association are:—"The improvement of the practice of mining, the discussion of all matters relating to such practice, and the protection and aid of the members in all matters connected with their practice." The circular sets forth "that meetings of the members are to be held monthly, at Dudley, Walsall, and Wolverhampton alternately throughout the year," and that a "report having been circulated that the proceedings of this association contemplate hostility towards the local Government Inspector, and opposition to the present colliery rules, the committee desire to deny, most emphatically, that such are the objects of their proceedings, but in fact the very reverse, for not only are they most desirous of submitting to the strictest observance of their share of the existing colliery rules, but they also contemplate assisting the local Government Inspector in every way in their power to revise and improve them, so as to localise, or rather, to individualise, the responsibility of all parties engaged in carrying them out. The association, however, intend resisting any attempt to unduly impose upon them the responsibility of all the rules, both general and special, which, if carried, could have no other effect than that of encouraging an amount of carelessness and recklessness amongst all the subordinate officers of the mine, which would lead to increased casualties to life and destruction of property, and would be contrary to the intention and spirit of the Act which ordered the 'Local Special Rules' to be framed. The special rules were, no doubt, established for the purpose of individualising the responsibility attached to all parties having the care of coal and ironstone mining."

"In furtherance also of the objects of the association, application has been made to the Committee of the Dudley and Midland Geological Society, which is now in such a flourishing and prosperous condition, and possesses a most unique collection of fossils, for permission for the members of this association to hold occasional meetings in their large museum, and to have the use upon certain terms of their splendid library of modern scientific works, geological maps, mining plans, mining records, &c.; and for permission also to make the society's museum a home for the deposit of any plains, sections, models, books, or papers relating to mining or to improved modern mining machinery and appliances, which may from time to time become the property of the association."

With reference to Mr. Baker, the circular states that "the local Government Inspector, having three months ago proposed an amended code of special colliery rules, with very considerable alterations, they were very strongly objected to by the trade, and by the mine agents of the district, which resulted in their consideration and acceptance being postponed for six months, with the exception of Rule 20, which the Secretary of State insisted upon being revised and accepted without delay. This rule has recently been revised accordingly, and has received the approval of the Secretary of State, the local Inspector, a committee of the coal trade, and the Committee of Mine Agents, and the Inspector insists that it should be incorporated with the old code of rules, and adopted at once throughout the district, and for that purpose he has caused it to be printed on slips that it may be pasted over the original Rule 20, and a re-issue with the amendment to all your men should be made at once. You should, however, send one of the slips to the Secretary of State for his written approval of the same before adopting them."

The Chairman, on rising, expressed the pleasure he felt in being selected by so numerous and influential a body of brother mine agents to preside over their proceedings that day. Although to a very great extent fortune had so favoured him that he had now nearly retired from a large practice into private life, still his heart was with them, and he should always look with delight on the many happy meetings he had spent with a large majority of the gentlemen then present. No one, he said, knew better than he did how to estimate the very heavy and increased responsibilites imposed upon the mine agents by the different Mines Inspection Acts; and he regretted to find it was attempted to make the mine agent responsible for every act of every subordinate officer of the mine. He thought, if this were carried, it would tend to increase rather than decrease accidents, for when subordinates knew that their superior officer would be held responsible for any negligence or recklessness committed by themselves, they would not exercise that discipline and care so essential to avoid accidents in mining. He considered the amount of carelessness and recklessness on the part of the men, as recently disclosed by the evidence given at Talk-o'-th'-Hill and the Oaks Collieries, defied even the most skilful and attentive supervision. Science in mining was completely frustrated by such acts of the workmen. One-third of the poor victims of the Talk-o'-th'-Hill explosion were found, after death, to have duplicate lamp keys, lucifer matches, and tobacco-pipes in their pockets, although to some extent, at intervals, working in an atmosphere which may by accident become in a few minutes explosive. The same applied to the poor unfortunate victims of the Oaks explosion. He trusted the association now formed would lead to improved discipline amongst the men, and increased intelligence of the members; but unless gross acts of carelessness on the part of the men by which life was imperilled were punished by the authorities, any amount of care and forethought of the mine agent would be without avail. The success of the association, he said, would be measured by its amount of usefulness; he had no fear of the result himself, if it were continued with the same hearty support with which it had commenced.

The election of officers was then proceeded with. Mr. John Yardley, of Tipton, as President; Mr. William North, of Tipton, as treasurer; and Mr. Henry Johnson, of Dudley, as honorary secretary; were unanimously elected.

The following gentlemen were unanimously elected as directors for the first year:—Mr. Samuel Bailey, Walsall; Mr. Stephen Cole, Bilston; Mr Jas. Cope, Pensnett; Mr. Elijah Davies, Dudley; Mr. Matthew Fletcher, Netherton; Mr. J. U. Fellowes, Walsall; Mr. John Field, West Bromwich; Mr. McGhie, Cannock Chase; Mr. Edward Greenway, Brierley Hill; Mr. Isaiah Hill, Wednesfield; Mr. James Hammond, Tipton; Mr. Edward Jones, Bentley; Mr. James Lindop, Bloxwich; Mr. Thomas Latham, Dudley; Mr. David Peacock, Tipton; Mr. William Spruce, Pensnett; and Mr. Elihu Smallman, Wednesbury.

The Articles of Association were read, and confirmed by the meeting, and ordered to be printed and registered without delay.

Messrs. Dulgnan, Lewis, and Lewis, of Walsall, were appointed solicitors to the association, and Lloyds' Banking Company bankers.

It was stated in the room that there were 135 mine agents practising in the district, 96 of the principal of whom had already become members, and upwards of 100*l.* was paid in in the room as subscriptions at the close of the meeting.

We hail with pleasure the opportunity of recording the birth of an association having for its object the improvement of the discipline of the miners, and increasing the intelligence of the mine agents, the saving of life, and improving the development of the mineral resources of the "Black Country."—*Birmingham Gazette.*

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